

# The Larva of *Trienodes reuteri* McLachlan (Trichoptera, Leptoceridae)

By ALLAN BRINDLE

Of the four species of the genus *Trienodes* McLachlan now recorded as British, the larvae of two, *bicolor* (Curtis), and *conspersa* (Rambur), are known, and are included in the keys to the larvae of Trichoptera in Lestage (1921). More recently Hickin (1942, 1954) has re-described and figured both these larvae from British material, and has indicated some distinguishing features between them.

Of the other two species, *simulans* Tjeder, is known only from Aberfoyle, Perthshire, where it was taken along the river Laggan in 1906, by Morton, who first recorded it as *T. reuteri* (Morton, 1906) but later corrected it to *T. simulans* (Morton, 1931). The larva of this species is unknown.

Larvae and adults of the fourth species, *reuteri*, McLachlan, were found in large numbers at Spurn, East Yorkshire (v.c. 61), in July 1963, and this appears to be the first British record. Pelham-Clinton (1966) gives details of this record.

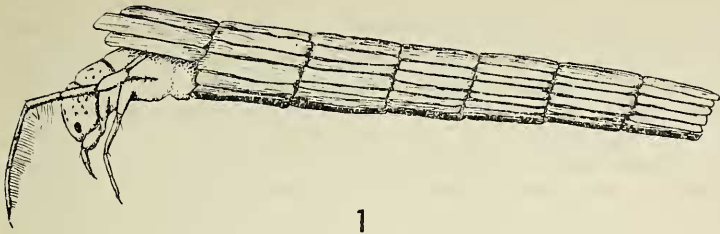
The larva of *T. reuteri* has not been described, and the purpose of the present paper is to describe and figure the larva, and to give a key for the separation of the three species of *Trienodes* known in the larval stage.

The occurrence of *reuteri* at Spurn was surprising on two counts—firstly the county of Yorkshire has been well worked for many years by entomologists interested in this order, and secondly that the area of Spurn was the subject of an entomological survey during the years 1947-50, the results of which were published in the *Naturalist* (1951-4) and subsequently issued as a separate publication.

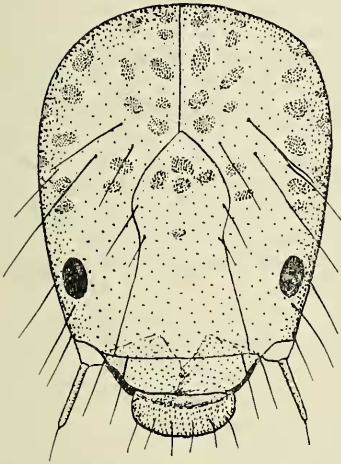
It is certain however that *reuteri* was not in the area during the survey, since the actual habitat, one of a series of drainage channels, only dates from 1954. During the Spurn survey the drainage channels in the area were thoroughly investigated and proved to be of great faunistic interest. One of these drainage channels, Walker Butts Bank Dyke, followed the coast line of the Spurn peninsula facing the Humber estuary, and ran in a NW-SE direction for about a mile, some yards inland from the actual beach. The south-eastern half extended from the hamlet of Kilnsey to the present Spurn Nature Reserve.

The dyke was obliterated by the sea during the East Coast floods of January 1953, and a new dyke was excavated the following year. Professor P. M. Butler, of the Royal Holloway College, London, who followed the re-colonisation of the fresh-water habitats following the floods, has given the following details. In 1954 there were no insects present in the newly completed dyke, nor were any found in 1956, though some of the original species of molluscs were found. In 1963 the salinity of the south-eastern section was found to vary from 15% sea-water at the south-eastern end, to 27% sea-water at the north-western end. *T. reuteri* was only found at the south-eastern end, and no other caddis was found.

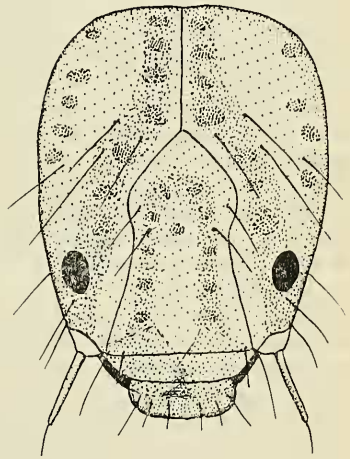
It would appear, therefore, that *reuteri* is the first caddis to colonise the habitat, and lack of competition has resulted in its present abundance. This is of interest since the halophile caddis, *Limnephilus affinis* Curtis, is not uncommon in the area, and one would have expected this caddis



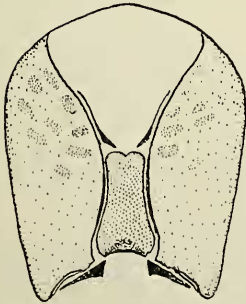
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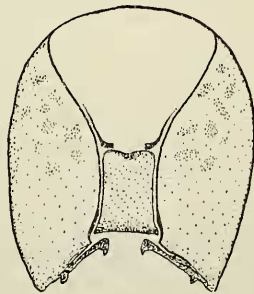
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*Triaenodes reuteri*: fig. 1, larva in case; fig. 2, head of larva, dorsal; fig. 5, head of larva ventral, showing apotome. *T. bicolor*: fig. 3, head of larva, dorsal. *T. conspersa*: fig. 4, head of larva, ventral, showing apotome (after Hickin, 1954).

to be present. The origin of the *reuteri* is obscure: it is not a strong flyer, and is most unlikely to have travelled any long distance without artificial aid, and so far the origin of the colonisation has not been found.

The genus *Triaenodes* appears to inhabit both static and lotic water. *T. bicolor* seems to be restricted to static water, and occurs in ponds and lakes rich in vegetation. *T. conspersa* is found in rivers, the larvae possibly living where the current is slower, and the larvae of *T. simulans* are likely to be found in similar habitats judging from the record at Aberfoyle. *T. reuteri* is characteristic of partially saline habitats, i.e. salt marshes, etc., according to reports from the continent (Pelham-Clinton, 1966).

The larvae of the Leptoceridae are distinguished by their slender bodies, by the comparatively long antennae, and by their elongated posterior legs, the coxae of which are directed forwards (fig. 1). In consequence of their slender build their cases tend to be narrower than in most caddis cases. The larvae of the genus *Triaenodes* are very distinctive in constructing their cases from pieces of vegetable material cut into uniform lengths and arranged spirally around the cases (fig. 1), in this respect resembling those of the Phryganeidae. From small larvae of the latter family those of *Triaenodes* are distinguished by the characters given above, and by their ability to swim through the water bearing their cases. The tibiae and tarsi of the posterior legs are fringed with long fine hairs and their cases are comparatively light. This ability to swim with the cases is shared by other Leptocerid larvae, such as *Leptocerus tinaeformis* Curtis.

The larvae of *reuteri* resembles that of *conspersa* in general colouration, but the ventral apotome (Hinton, 1963) (= "gula" of Hickin) is short and wide like that of *bicolor*.

The head of the larva of *reuteri* (fig. 2) is yellowish or pale brown, marked with dark spots, without the darker longitudinal bands found in *bicolor* (fig. 3), and so resembling that of *conspersa*. The dark spots in the latter larva, however, are less extensive and more restricted to the posterior part of the head, from the figure given in Hickin (1954); the anterior spots being well removed from the eyes. The fronto-clypeus of *reuteri* has five dark spots, one medially placed, whilst that of *conspersa* has two spots.

The pronotum of *reuteri* larvae is lightly sclerotised, pale brown or yellowish with a dark posterior border, and with two short longitudinal dark marks on the disc. A few dark spots occur towards the posterior border. The mesonotum is similar to the pronotum but less sclerotised, and the pigment is correspondingly lighter. The metanotum is membranous.

The legs are pale yellow and greatly unequal, the ratio of the lengths, including the claw, but excluding the coxae, of the first, second, and third pairs, being approximately 1:1.5:3. The ratio of the claws is less, and the greatest differences lie between the tarsi and tibiae, whose ratio is about 1:2:4. The tarsi, tibiae, and femur of the third pair are each about twice the length of those of the second pair. The tibiae and femora of the third pair of legs are apparently composed of two segments, a transverse ridge being present about the mid-point, the basal half being slightly the longer. This division is well marked on the femora, but less prominent on the tibiae. Such a division is known in other Leptocerid

larvae, most apparently having the femur divided, whilst *Mystacides* and other genera also possess this division on the tibiae.

The case of *reuteri* (fig. 1) is constructed from vegetable material, and spirally made. All the cases examined are truncate posteriorly, unlike those of *bicolor* which are generally more tapered and pointed posteriorly. Presumably these truncate cases are due to the removal of the earlier constructed parts of the case since they are shorter in comparison to the lengths of the larvae. The lengths of fully grown larvae of both *bicolor* and *reuteri* is about 12 mm., which is about that of *conspersa*. The lengths of the cases vary, though their diameter is fairly constant. *Conspersa* cases measure 17 mm. (Hickin, 1954); those of *reuteri* are from 20-24 mm.; whilst *bicolor* cases range from 26-30 mm., and even (Hickin, 1942) may be 35 mm. in length.

## KEY TO LARVAE

1. Head broader, and with longitudinal dark bands on the dorsal surface of the genae and on the fronto-clypeus (fig. 3); ventral apotome short and broad (as fig. 5); cases longer and more tapering; in fresh water habitats, in ponds and lakes rich in aquatic vegetation .....  
*bicolor* Curtis
- Head narrower and more elongate, without any longitudinal dark bands (fig. 2); cases shorter, more parallel-sided and truncate posteriorly (fig. 1); in lotic water or in saline habitats ..... 2
2. Ventral apotome short and broad (fig. 5); head more heavily marked with dark spots, five being on the fronto-clypeus (fig. 2); characteristic of saline habitats ..... *reuteri* McLachlan
- Ventral apotome long and narrowed posteriorly (fig. 4); head less heavily marked with spots, only two dark spots on fronto-clypeus (Hickin, 1954); in rivers ..... *conspersa* Rambur

## REFERENCES.

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HARFYIA BICUSPIS BORKH. IN SOUTH DEVON.—I found an empty cocoon of an *H. bicuspis* (alder kitten) on birch in Ashclyst, South Devon, on 10th April last. From the state of the pupa skin I would say that the moth had emerged last year. Have there been previous records from this area?—E. RAMSDEN, 4 Temple Road, Bishopthorpe, York. 15.iv.1966.

DASYPOLIA TEMPLI THBG. IN NORTH YORKSHIRE.—On the 18th October I found six (five males and one female) *D. templi* (brindled ochre) around the electric light outside the Lion Inn on Farndale Moor. This is on the Cleveland Hills above Hutton-le-Hole and some 1300 feet above sea level. I have never before seen more than single specimens of this moth. There were no other species at the light.—E. RAMSDEN, 4 Temple Road, Bishopthorpe, Yorkshire. 15.iv.1966.